Some years since Mr. Waterhouse first discovered this insect near Dorking. I found it at Mickleham rather plentifully the beginning of October 1837, on herbage under the hedges, in the park behind the church; at Gravesend in June, Mr. S. Stevens: it appears to be confined to chalky districts.

34. *A. atomarium*, Kirb., Gyll., Germ., Steph. Man., Schönh.
— *pusillum*, Germ.

This is the most minute species of the genus found in England; it was originally described by Mr. Kirby from a Swedish specimen sent him by Major Gyllenhal, and for many years it was unknown as a British insect until Mr. Waterhouse found it near Dorking. In a note from Germar relative to this species, he informs me that the "*Ap. atomarium* of Kirby is, without doubt, identical with the *Ap. pusillum* of Germar."

Taken in abundance at Birch Wood on the wild thyme (*Thymus Serpyllum*) in September by Mr. S. Stevens, Mr. Smith and myself, and occasionally in other places on the same plant.

35. *A. vicinum*, Kirb., Germ., Steph., Schönh.
— *Loti*, Gyll.
— *incrassatum*, Germ.

Very rare in the south of England, but I found it in Yorkshire in profusion on the black thorn (*Prunus spinosa*), growing on a hedge-bank by the side of a ditch full of rushes in a marshy situation.

36. *A. Hookeri*, Kirb., Germ., Gyll., Steph., Schönh.

I have frequently taken this insect in abundance in Yorkshire by sweeping in clover-fields (*Trifolium pratense*), particularly in a field near Low Harrowgate, in June and September; and plentifully near Southampton in June; one example was found at Gravesend in June, and another at Shirley Common in September, by Mr. S. Stevens.

[To be continued.]

LI.—*On the British species of* Grammonema *and* Eunotia.

By John Ralfs, Esq., M.R.C.S., Penzance*.

[With a Plate.]

Grammonema, *Ag.*

Filaments gelatinous, elongated, flexible, not fragile; frustules rectangular, plane, not striated, scarcely siliceous.

In appearance this genus comes very near to *Fragilaria*, with which it is united by most writers, but its habit is so very differ-

* Read before the Botanical Society of Edinburgh, February 8th, 1844.

ent that I am inclined with Agardh to keep them distinct. In *Fragilaria* the filaments are very fragile, breaking in pieces at the slightest touch; the species do not adhere well to paper; the frustules are siliceous and glass-like, and may be subjected to a red heat without any other alteration than the destruction of the colouring matter, and at each end are two more or less evident pellucid puncta.

In *Grammonema* there is scarcely any silica, in which important character it differs from most of the *Diatomaceæ*; the filaments are not fragile and are highly mucous, adhering firmly to paper or glass, and when dried appearing like a mere stain; the application of nitric acid or a red heat destroys their form, and I can perceive no puncta at the ends of the frustules.

The filaments are elongated, ribbon-like, and composed of numerous frustules which are longer than broad.

1. *G. Jurgensii*, Ag. Filaments attenuated, yellowish-brown; frustules three to eight times longer than broad, slightly separated at the angles. Ag. Consp. Diatom. p. 63. *Fragilaria Jurgensii*, Ktz. Synop. Diatom. in Linnæa 1833, p. 587. *Fragilaria aurea*, Carm. in Hook. Br. Fl. vol. ii. p. 403 ! Harv. Br. Alg. p. 198. *Conferva striatula*, Jurgens, Dec. 19, no. 6 ! (not *Conf. striatula*, Dec. 11, no. 7.).

β. *diatomoides*. Filaments turning green when dried. *Fragilaria diatomoides*, Grev. in Hook. Br. Fl. p. 403; Harv. Br. Alg. p. 198; Wyatt, Alg. Damn. no. 233 !

On marine algæ: spring.

α. Appin, *Capt. Carmichael*; Antrim, *Mr. D. Moore*; Land's End and Penzance.

β. Kilkee, *Mr. Harvey*; Torquay, *Mrs. Griffiths*; Mount's Bay.

In a mass both are dark brown, but much paler if separated in the water. In α the colour is but little altered in drying, but in β it becomes green.

Filaments elongated, giving a feathery appearance to the plant to which they are attached, very mucous, flexible, gradually attenuated; frustules under the microscope nearly colourless, three to eight times longer than broad, plane, slightly attenuated at both ends, and hence disconnected at their angles, and as the ends are also often somewhat rounded, the margins of the filament have a crenate appearance.

Mr. Harvey, to whose liberality I am indebted for specimens of many of Capt. Carmichael's plants, has given me a portion of a specimen of '*Fragilaria aurea*' gathered by Carmichael himself, and also Irish specimens both of that plant and of '*Fragilaria diatomoides*' of Greville. These I have attentively examined, as well as specimens gathered at Torquay and Penzance, and I

regret that I cannot detect any character to distinguish '*Frag. aurea*' from '*Frag. diatomoides*,' except that the latter in drying changes to a green colour.

The following extracts from their letters will show that my opinion has been confirmed by the observations of Mrs. Griffiths and Mr. Harvey, who at my request compared these plants.

Mrs. Griffiths writes, "I have examined your specimens of '*Fragilaria aurea*' very carefully, and compared them with '*Fragilaria diatomoides*' from Torquay, gathered at different times, and can find nothing to distinguish one from the other."

Mr. Harvey observes, "I fear you are right about '*Frag. aurea*' if colour be not in itself a specific character."

Mr. Berkeley has enabled me to compare our plant with the '*Conferva striatula*' of Jurgens' Algæ, and thus to assure myself that it is completely identical with Jurgens', which is doubtless the '*Grammonema Jurgensii*' of Agardh.

PLATE XIV. fig.5 . *Grammonema Jurgensii*: *b*, single frustule; *c*, lateral view.

EUNOTIA, *Ehr.*

Frustules free, simple or binate, quadrangular, with two puncta at each end; the front is flat or concave, and the dorsum convex; the lateral surfaces are flat.

Some species placed by Ehrenberg in this genus have cymbiform frustules and belong to Agardh's genus *Cymbella*, under which they will be described.

In *Eunotia* the frustules resemble those of some species of *Fragilaria*, from which the present genus differs only in not having its frustules united into a filament.

Viewed laterally the frustules are lunate. The lateral surfaces are flat, and do not enter into the front view, which is quadrangular with two puncta at each end. Longitudinally the front is flat or concave and the dorsum convex; the convex surface is generally raised in transverse ridges, and the *number* of these ridges, as seen in a lateral view, when they appear like teeth, distinguishes the species.

Professor Bailey suspects that "the number of these teeth is liable to variation, and that the number of species has in consequence been made too great*."

1. *Eu. monodon* (Ehr.?). Lateral view concave on one margin, convex on the other and constricted near the ends; striæ none or very obscure. Bailey, Amer. Bacil. in American Journal of Science and Arts, vol. xlii. no. 1. pl. 2. f. 28.

In freshwater pools. Piltdown Common near Uckfield, Sussex, *Mr. Jenner*; Penzance.

* See American Journal of Science and Arts, vol. xlii. No. 1.

The frustules are very minute, but vary greatly in length, being in some specimens only twice as long as broad, and in others six or seven times longer than broad.

The front view has its ends slightly rounded and its puncta very obscure. In the lateral view the shorter frustules are more turgid on the back, and more constricted near the ends. Although the frustule seems in general to have no striæ, I believe that this apparent deficiency is owing to the minute size of the specimens which have come under my notice, as I have occasionally observed very faint lateral striæ.

A frustule of this species, though very much smaller, has great resemblance to a solitary frustule of *Fragilaria pectinalis*; but in this plant the concavity of one margin is generally greater, and the constriction near the ends of the frustule more considerable; the front view, too, is narrower in proportion to the lateral; still it may eventually prove to be only the commencement of that plant.

In the 'American Bacillaria' there is no description of this species, but as Bailey's figure represents a larger plant, with distinct lateral striæ, it is probably taken from a more mature specimen.

PLATE XIV. fig. 1. *Eunotia monodon*: *a*, front view; *b*, front view of frustules deprived of their colouring matter; *c*, lateral views.

2. *Eu. diodon*, Ehr. Lateral view striated, with the convex margin bidentate. Ehr. Infus. p. 192. t. 21. f. 23; Pritch. Infus. p. 214; Bailey, *l. c.* pl. 2. f. 29.

In freshwater pools, very rare. Penzance, *J. R.*; Piltdown Common near Uckfield, Sussex, *Mr. Jenner.*

Front view about twice as long as broad, with two distinct puncta at each end, and the terminations of the lateral striæ evident along the lateral margins. Lateral view much narrower; the margin on one side flat or slightly concave, on the other convex with two rounded elevations and a constriction near each end; the lateral striæ are very distinct. The transverse ridges on the dorsum appear much more considerable in the shorter than in the longer frustules.

The figure in the 'American Bacillaria' represents a larger plant than the specimens I have seen, but agrees with them in other respects.

This species differs from *Eunotia tetraodon* in the number of ridges on the dorsum, which is less rounded, and in having the lateral surface much narrower than the front, and one of its margins flat or slightly concave.

PLATE XIV. fig. 2. *Eunotia diodon*: *a*, front view; *b*, lateral view.

3. *Eu. triodon* ? Ehr. Frustules with three ridges on the dorsum. Ehr. Infus. p. 192. t. 21. f. 24; Pritch. Infus. p. 214. f. 164 ?; Bailey, *l. c.* pl. 2. f. 30.

In Cold Bath Spring near Tunbridge Wells, *Mr. Jenner*.

Frustules very minute, with two indistinct puncta at each end. The lateral view is slightly concave on one side, and on the other convex with three dentations; striæ wanting or indistinct.

The form of this species greatly resembles a single frustule of *Fragilaria pectinalis* β*, but is smaller; the protuberances also are larger in proportion to the size of the plant.

The figure in the 'American Bacillaria' is much larger and has distinct lateral striæ, and was probably taken from an older specimen.

Plate XIV. fig. 3. *Eunotia triodon*: *a*, front view; *b*, lateral view.

4. *Eu. tetraodon*, Ehr. Frustules with four ridges on the dorsum; lateral striæ distinct. Ehr. Infus. p. 192. t. 21. f. 25; Pritch. Infus. p. 214; Bailey, *l. c.* pl. 2. f. 31.

In boggy pools, rare. Dolgelley and Penzance, *J. R.*; Weston Bogs near Southampton, *Mr. Jenner*.

This is a large species: in the front view the puncta are distinct; in the lateral view one margin is very concave, and the other very convex with four large, rounded elevations, and a constriction near each end. The strongly marked striæ slightly converge towards the concave margin.

Plate XIV. fig. 4. *Eunotia tetraodon*: *a*, front view; *b*, dorsum; *c*, lateral view.

LII.—*Description of a new Genus of Gobioid Fish.* By John Richardson, M.D., F.R.S. &c.

To Richard Taylor, Esq.

My dear Sir, Haslar Hospital, 17th April, 1844.

I send you the generic characters of a gobioid fish discovered by Sir James Clark Ross at Kerguelen's Land, on his recent antarctic voyage. The genus will occupy a place in the system near *Callionymus* and *Trichonotus*, and affords a connecting link between the Gurnards and Gobies.

I remain, dear Sir, yours faithfully,
John Richardson.

Channichthys, *Richardson*.

Caput magnum, cranio scabro, subtetragono; facie horizontali, depressiuscula, ante oculos longa, lateraliterque per parietes oris membranaceos aucta.

Faux laxissima, horizontalis, terminalis; rictu superne ab ossibus

* This may be the *Fragilaria trionodis*, Ehr., a species I am unacquainted with except by name.